I have serious doubts about the wisdom of establishing a National Commission on Health Science and Society (S. J. Res. 145) at this time, largely because it would operate in a climate of speculation rather than certainty. Guidelines established by such a Commission might therefore create more problems than they would solve. The imprecise name for the Commission and the vague language in which its purpose and duties are couched point up the haziness of the issues at this stage of our knowledge. The diversity of matters suggested for consideration by the proposed Commission (legal, social, ethical, budgetary, educational, technologic, administrative, and other) makes the task virtually impossible for a single body.

A more practical course might be preliminary hearings by a committee of the Congress, at which eminent representatives of pertinent disciplines might express thier views of the specific problems that need exploration and the best methods of pursuing them. Without a carefully circumscribed purpose and clearly defined objectives, we cannot expect any commission to formulate practicable recommendations. The most we can expect is a debate on the philosophic and theoretic implications of new knowledge and discoveries. Whereas the intellectual diversion in such debates seems harmless enough, the time, effort, and funds expended might be more profitably diverted, it seems to me, to extending the benefits of current

medical knowledge to more of our people and to seeking new knowledge for the continued improvement of human health and welfare.

Of primary concern, presumably, are the ethical and moral implications of modern medical research. I should like to point out that the medical profession has long been acutely aware of the necessity of ethical standards. The Hippocratic Oath, which dates from pre-Christian times, is still embraced by every physician who embarks on a medical career. As new knowledge has required reassessment of medical ethics, the profession has voluntarily established new codes to prevent indiscretions and abuse of professional privileges. Adequate ethical guidelines for even the boldest clinical experimentation therefore already exist and are being observed (Medical Research and the Golden Rule, Journal of the American Medical Association, vol. 203, pp. 132-134, February 19, 1968).

Recent reviews of the evolution of human experimentation during the past few centuries have shown that successive generations of medical scientists have been increasingly cautious in observing the rights and welfare of volunteers, in planning and conducting clinical trials, and in avoiding exploitation of the mentally or physically infirm. The highly skilled teams in the specialized cardiovascular research centers, for example, have given deep and deliberate thought to the social, ethical, legal, economic, and other implications and consequences of their research. (Editorial: Human Cardiac Transplantation, Journal of Thoracic

and Cardiovascular Surgery, vol. 55, pp. 447-451, March, 1968). The numerous recent publications on these subjects attest to their concern.

The ethical aspects of cardiac transplantation are inextricably entwined with the medical and scientific, and sound judgments require the broad knowledge that comes from extensive experience in weighing cautiously benefits against hazards in clinical applications. Those unaccustomed to the unique problems introduced by the complexity and variability of living systems would have great difficulty designing practicable guidelines for medical scientists. Rigidified standards in medical science are not only difficult to interpret, but are virtually impossible to observe or enforce. In the final analysis, therefore, we must depend on the judgment, integrity, and humanitarianism of the medical scientists and his peers. Actually, the ethical and moral questions facing the medical scientist today are not drastically different from those traditionally faced by practicing physicians. The spectacular nature of contemporary medical practice has merely dramatized these questions. Being entrusted with the health of a human being entails the gravest kind of moral responsibility, and every physician is well acquainted with the weighty life-and-death decisions that medical practice poses -- decisions that often require the most sober deliberation of a succession of consultants.

Among safeguards against ethical violations is control by association. Medical scientists today generally work in teams

associated with institutions and sponsored by research and health agencies. Committees on Research in these institutions carefully consider not only the scientific, but also the social, ethical, and other implications of all research proposals before acting on them. The scientific community therefore has built-in commissions at every professional level -- international, national, and local -- to study and judge the merit, feasibility, and morality of human experimentation. The danger of indiscriminate human experimentation is further curbed by intrinsic restrictions on unusual clinical trials like cardiac transplantation, which impose exceptional demands on personnel, equipment, and facilities.

Maurice Visccher recently observed that "Scientific inquiry has been the chief instrumentality in bringing men from darkness to light, while it has incurred, at every step, determined opposition from the powers of ignorance, misunderstanding and jealousy." The dramatic advances of modern medical science can be expected to engender anxiety and apprehension in some, but frenzied emotionalism and hasty actions will not solve our problems. Human beings are surrounded by danger -- natural as well as manmade; fire, water, electricity, and automobiles can be lethal or beneficent, depending on what use we make of them. "It is the business of the future to be dangerous;" wrote Alfred North Whitehead, "and it is among the merits of science that it equips the future for the duties." Because humanitarianism has been the guiding principle of medical scientists for centuries, I believe that fears of indiscretion and abuse are more illusory than real.

I should be deeply disappointed if the well-intentioned efforts of a Commission on Health Science and Society should result in prescriptions that might hamper scientific creativity. Sir Peter Medawar, whose classic studies in the 1940's formed the basis for the recent advances in typing of donor and recipient tissues, pointed out in a recent issue of the British Medical Journal (February 10, 1968) that "heroic adventures of today are part of tomorrow's ordinary medical care" and warned that "If we thwart or discourage research on transplantation today, we are deliberately willing away part of the medical heritage of the future."

It would also be unfortunate if such a Commission should create doubt in the minds of the public about the intellectual and moral integrity of medical scientists and practicing physicians in general. The distrust arising from such doubt may not only shake the patient's confidence in his personal physician but may also discourage public support of research and thus impede scientific progress. We need only look at the record to see the parallelism between public support of research and the practical benefits of medical science.

At this point, it seems to me, we need to give priority to gaining additional basic information in the fields with which the proposed Commission would be concerned. Before we try to evaluate the ethical, legal, economic, and logistic aspects of transplantation, for example, we need to establish the proper clinical criteria for selection of donor and recipient, to devise more effective methods of obtaining, preserving, and storing

donor organs, to learn more about histocompatibility phenomena, to develop new immunosuppressive agents or technics to control rejection without jeopardizing the immunologic defenses of the body, and to learn more about the potentialities of heterografts. We need to develop some means of supporting a prospective recipient's failing heart while a suitable donor organ is being sought and to sustain the life of a recipient when a transplanted heart fails and another donor organ must be found. We therefore need to pursue much more vigorously the development of a mechanical cardiac device that would parallel the artificial kidney. Such an artificial heart would, in fact, eliminate many of the clinical, ethical, legal, and logistic problems for which the Commission has been proposed. These scientific problems are the most pressing at the moment and, in fact, their resolution may affect the nature of the issues to be considered by a Commission on Health Science, as well as the method of exploring them.

Another practical and pressing need is the education of the public in the increasing impingement of science on everyday life and in its tangible benefits, including the unprecedented standards of health and comfort that scientific research and its pragmatic companion, technology, have given modern man. Educating the public in the spirit of science and in its yet unrealized potentialities will go far in helping it make wise, informed decisions about the future course and scope of research. I urge reconsideration of the priorities of these matters.